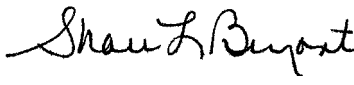




☒ North Carolina Wildlife Resources Commission ☒

MEMORANDUM

TO: Mr. Rich Gannon
Division of Water Quality

FROM: Shari L. Bryant, Piedmont Region Coordinator 
Habitat Conservation Program

DATE: 11 September 2007

SUBJECT: B. Everett Jordan Reservoir Water Supply Nutrient Rules, Chatham County, North Carolina.

Biologists with the North Carolina Wildlife Resources Commission (NCWRC) have reviewed the subject document and we are familiar with the habitat values of the area. Our comments are provided in accordance with provisions of the Clean Water Act of 1977 (as amended), Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d), and North Carolina General Statutes (G.S. 113-131 et seq.).

B. Everett Jordan Reservoir is a 5,560-ha U.S. Army Corps of Engineers project. The dam is located at the confluence of the Haw River and New Hope Creek. The reservoir was constructed to provide flood control for the Cape Fear River and is used for municipal water supply and recreational activities such as fishing, hunting, boating, water skiing and swimming. The reservoir supports a diverse fishery including shad (*Dorosoma* spp.), sunfish (*Lepomis* spp.), crappie (*Pomoxis* spp.), catfish (*Ictalurus* spp.), largemouth bass (*Micropterus salmoides*), striped bass (*Morone saxatilis*), bowfin (*Amia calva*), and carp (*Cyprinus carpio*). Crappie, largemouth bass and striped bass are the primary species sought after by anglers.

The reservoir is on the State's 303(d) list of impaired waters. Chlorophyll *a* concentrations are frequently higher than the current water quality standard of 40-µg/l. The Division of Water Quality (DWQ) has prepared a Total Maximum Daily Load (TMDL) and nutrient management strategy for the reservoir. Although algal growth (chlorophyll *a*) is affected by numerous factors, nutrients such as nitrogen and phosphorus are most commonly managed to address excessive algal growth. Therefore, a TMDL with nutrient loading reduction goals was developed for the reservoir.

The proposed rules include a 35% reduction in nitrogen and a 5% reduction in phosphorus for the Upper New Hope Creek arm, and an 8% reduction in nitrogen and a 5% reduction in phosphorus for Haw River arm. Strategies for achieving these nutrient reductions are included for point and non-point

11 September 2007
Water Supply Nutrient Rules
B. Everett Jordan Reservoir

sources. Generally, the agriculture community would meet the loading targets within 5 years through voluntary enlistment of additional practice implementation, or within 8 years through additional measures imposed by the Commission. Local governments and state and federal entities would implement programs that regulate new development to meet subwatershed loading rate targets based on percent reduction goals, and would incrementally implement sustainable load reducing measures on existing developed lands toward the percent reduction goals. Local governments would protect 50-foot existing vegetated riparian areas for intermittent streams, perennial streams, and impoundments. Point sources would meet annual mass loading allocations equating to the percent reduction goals within one year for phosphorus and seven years for nitrogen. Parties subject to the various rules could achieve partial compliance by obtaining more cost-effective loading reductions from other sources. Also, fertilizer applicators would be required to take training or have a certified plan in place for lands where they apply fertilizers.

Nutrients, particularly nitrogen and phosphorus, are important in developing and maintaining quality reservoir fisheries. Nutrients stimulate production and growth of the planktonic organisms that are the base of the aquatic food chain. However, excessive nutrients can be detrimental; high density planktonic or algal blooms can degrade water quality and increase fish stress which can manifest as disease or in extreme cases as a fish kill.

In our previous comments (Bryant, 20 November 2003; 31 May 2005; 15 May 2007), we expressed concern that significant reductions in nitrogen or phosphorus could affect the quality of reservoir fisheries. We recommended a mean summer chlorophyll *a* lower limit of 15 µg/l for the middle section of the reservoir be used when determining the nutrient load reduction targets for the TMDL. This recommendation was based on a study by Maceina and Bayne (2001) that documented significant reductions in nutrients could adversely affect a largemouth bass fishery.

Based on model data presented during the TMDL stakeholder process, the proposed nutrient reductions should result in mean summer chlorophyll *a* concentrations of 18-22 µg/l in the middle section of the reservoir. Because of the uncertainties in the model and our concerns regarding excessive nutrient reduction and its impact on the reservoir fishery, we support the proposed rules as an appropriate starting point. The proposed reduction of nutrients should result in improved water quality and should reduce the likelihood of disease outbreaks and fish kills.

Although we support the proposed rules as an appropriate starting point, significant growth and development continues to occur in the watershed and several streams within the watershed support rare and sensitive species such as the federal and state endangered Cape Fear shiner (*Notropis mekistocholas*). Secondary and cumulative impacts resulting from future growth can result in stream bank instability and other stream morphology changes, increased sediment loading, changes in substrate characteristics, modified aquatic food resources, changed stream temperatures, increased nutrient loading, increased toxicant loading, changed fish communities, and reduced complexity of benthic habitats. Therefore, to protect water quality and aquatic habitat in developing landscapes, we will continue to encourage local governments to implement the measures described in NCWRC's *Guidance Memorandum to Address and Mitigate Secondary and Cumulative Impacts to Aquatic and Terrestrial Wildlife Resources and Water Quality* (August 2002).

We appreciate the efforts of DWQ and the stakeholders in the development of the TMDL and the nutrient management strategy for reservoir. We encourage DWQ and other stakeholders to continue to collect data to improve the accuracy of the model and to evaluate the effectiveness of the nutrient reduction strategies detailed in the proposed rules.

11 September 2007
Water Supply Nutrient Rules
B. Everett Jordan Reservoir

Thank you for the opportunity to comment on these rules. If you need additional information, please contact our office at 336-449-7625.

Literature cited

Maceina, M.J. and D.R. Bayne. 2001. Changes in the black bass community and fishery with oligotrophication in West Point Reservoir, Georgia. *North American Journal of Fisheries Management* 21:745-755.

cc: Corey Oakley, WRC
Brian McRae, WRC